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EXAMINER	
BATTAGLIA, MICHAEL V	
ART UNIT	**PAPER NUMBER**
2627	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/541,986	VAN DER KALL, HERMAN PETRUS	
	Examiner	Art Unit	
	Michael V. Battaglia	2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 July 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16 and 18-22* is/are rejected.

7)☒ Claim(s) *17 and 23* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 July 2005* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

2. The drawings are objected to because the rectangular boxes shown in figure 1 should be provided with descriptive text labels. For instance, providing element 31 of Fig. 1 with a -laser-- label is suggested.

Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Objections

4. Claims 1-23 objected to because of the following informalities:

a.) On line 7 of claim 1, replacing "motor (4) is rotated" with --disc (2) is rotated-- is suggested because the disc "is rotated" by the motor (see line 3 of claim 1).

b.) On line 6 of claim 9, line 12 of claim 14 and line 15 of claim 15, replacing "said first" with --a first-- is suggested to avoid improper antecedent basis issues.

c.) On line 11 of claim 15 and line 5 of claim 17, replacing "said second" with --a second-- is suggested to avoid improper antecedent basis issues.

d.) On line 6 of claim 17, replacing "said duty" with --a duty-- is suggested to avoid improper antecedent basis issues.

e.) Throughout the claims, replacing "FAN" with --fan-- is suggested to avoid confusion over whether "FAN" is an acronym.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 2-5, 9, 12-15 and 22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In regard to claim 12, a broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the

decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 12 recites the broad recitation "in the range of 1-10 sec," and the claim also recites "preferably in the order of about 5 sec" which is the narrower statement of the range/limitation.

In regard to claims 2, 14, 15 and 22, the claims contain the limitation that "the temperature sensing means (50) preferably being arranged for measuring the temperature of a disc drive component." Because this limitation makes it unclear whether or not the temperature sensing means is required to be arranged for measuring the temperature of a disc drive component, the scope of protection sought is unclear and the claims indefinite.

Note that claims 3-5, 9 and 13 are rejected under 35 U.S.C. 112, second paragraph, due to their dependency on claims 2 and 12.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 6, 7, 10, 11, 14 and 18-20 are rejected under 35 U.S.C. 102(b) as being anticipated by the first embodiment (Figs. 1-3 and their descriptions) of Nakatsuka et al (hereinafter Nakatsuka) (US 6,542,449).

In regard to claim 1, Nakatsuka discloses a disc drive apparatus (Fig. 1, element 1) for writing and/or reading information into and/or from a disc (Fig. 1, element 2 and Col. 6, lines 57-59), comprising: a controllable motor (Fig. 1, element 3) for rotating a disc (Fig. 1, element 2); a

control unit (Fig. 1, element 13) having a first output (Fig. 1, portion of element 7 from which the arrow from element 7 to element 3 is output) for generating a control signal (Fig. 1, arrow from element 7 to element 3) for said motor (Col. 8, lines 18-32); wherein the control unit is designed to be capable of operating in a FAN mode (Fig. 2) in which said motor is rotated without any writing and/or reading being executed by the disc drive apparatus (Fig. 2, step S8; Col. 9, lines 5-9; Col. 10, lines 32-51).

In regard to claim 2, Nakatsuka discloses that the disc drive apparatus further comprises a temperature measuring means (Fig. 1, element 5) for generating a measuring signal ("output of the thermistor 5" of Col. 8, lines 47-49) indicating a temperature occurring within the disc drive apparatus (Col. 7, lines 59-67), the temperature measuring means preferably being arranged for measuring the temperature of a disc drive component ("thermistor 5 is provided in the vicinity of the LDU [(laser diode unit)] of the pickup 4" of Col. 7, lines 50-67); wherein said control unit has a signal input (Fig. 1, portion of upper-level controller 13 to which the arrow from thermistor 5 is input) coupled to said temperature measuring means (Col. 8, lines 47-49), and is designed to enter said FAN mode in response to the measuring signal received from said temperature measuring means (Fig. 2, step S4 and Col. 9, lines 23-29 and Col. 10, lines 1-4).

In regard to claim 3, Nakatsuka discloses that said control unit is designed to enter said FAN mode if, at the completion of a write/read operation ("after completion of a read/write operation" of Col. 9, lines 5-9), said measuring signal indicates a temperature ("temperature T of pickup 4" of Col. 9, lines 27-29) above a first threshold temperature ("predetermined acceptable temperature Ta" of Col. 9, lines 27-29), for instance 60°C (Fig. 2, step S4 and Col. 10, lines 1-4).

In regard to claim 6, Nakatsuka discloses that said control unit is designed to set, in said FAN mode, a rotational speed of said motor at a predetermined safety value (rotational speed at "the destination pickup address" of Col. 13, line 5 and see Fig. 3) selected for optimum cooling effect (Col. 13, lines 2-11). Note that a reasonable interpretation of the claimed "optimum cooling effect" is not limited to a maximum cooling effect because a cooling effect can be optimized according to other factors such as cooling efficiency or power consumption.[1] In the disc drive apparatus of Nakatsuka, the cooling effect is optimized to increase cooling efficiency by reducing "the temperature T of the LDU to be less than or equal to the acceptable temperature Ta" without an unnecessary increase in power consumption that would be caused by moving the pickup further inward than needed and rotating the disc faster than needed (Col. 13, lines 2-11 and note that the cooling process of Col. 13, lines 2-11 achieves the same effect as the iterative cooling process of Col. 10, line 12-Col. 13, line 42 and Col. 12, line 66-Col. 13, line 1 without the time-consuming iteration).

In regard to claim 7, Nakatsuka discloses that said control unit is designed to set, in said FAN mode, a rotational speed of said motor at a predetermined safety value ("rotational speed that is assigned to the destination zone" of Col. 10, lines 34-35) selected for low audibility (Col. 10, lines 32-42 and note that the predetermined safety value is selected for low audibility because the "rotational speed that is assigned to the destination zone," which is "the next zone closer to the center P of rotation" (Col. 10, lines 19-31), is lowest of the higher rotational speeds shown in Fig. 3 and a lower rotational speed will have lower audibility (see Col. 3, lines 6-7 of Shennib et al (US 5,898,572))).

[1] Claim 6, interpreted as if "optimum cooling efficiency" were limited to maximum cooling efficiency, is rejected

In regard to claim 10, Nakatsuka discloses that the control unit is designed to be capable of operating in a duty cycle mode in which the control unit is alternatingly operative in a normal mode portion during which writing/reading is performed, and in an energy saving mode portion during which writing/reading is temporarily suspended while rotation of said motor is continued (Col. 13, lines 15-26).

In regard to claim 11, Nakatsuka discloses that the control unit is designed to maintain the rotational speed of the motor substantially constant during the duty cycle mode (note the "or" situation of the "and/or" on Col. 13, line 24 where "the efficiency of cooling the pickup 4" is increased by solely by "mov[ing] the pickup 4 toward the center of rotation of the DVD-RAM disk 2" (Col. 13, lines 15-26)).

In regard to claim 14, Nakatsuka discloses that the disc drive apparatus comprises temperature measuring means (Fig. 1, element 5) for generating a measuring signal ("output of the thermistor 5" of Col. 8, lines 47-49) indicating a temperature occurring within the disc drive apparatus (Col. 7, lines 59-67), the temperature measuring means preferably being arranged for measuring the temperature of a disc drive component ("thermistor 5 is provided in the vicinity of the LDU [(laser diode unit)] of the pickup 4" and "is suitably used in the pickup 4 as a temperature measuring device for detecting the temperature of the LDU" (Col. 7, lines 50-67)); wherein said control unit has a signal input (Fig. 1, portion of upper-level controller 13 to which the arrow from thermistor 5 is input) coupled to said temperature measuring means (Col. 8, lines 47-49), and is designed to monitor said measuring signal during a write/read operation, and to enter said duty cycle mode in response to receiving the measuring signal indicating a temperature

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below under 35 U.S.C. 103.

above a second threshold temperature ("predetermined acceptable temperature Ta" of Col. 9, lines 24-32 and Col. 10, lines 1-4, which is used to determine "whether the pickup 4 is overheated" in Col. 13, lines 15-20 (see Col. 9, lines 30-32)) higher than [a] first threshold temperature (Col. 13, lines 15-26; note that claim 14 does not connect the claimed "first threshold temperature" to the claimed "disc drive apparatus" in any way other than being lower than the second threshold temperature; and further note that second threshold temperature of Nakatsuka (i.e. "predetermined acceptable temperature Ta"), which is used to determine whether the pickup 4 is overheated, is higher than an infinite number of first threshold temperatures which are lower than Ta and higher than the theoretical absolute zero temperature).

In regard to claim 18, Nakatsuka discloses that the disc drive apparatus is an optical disc drive apparatus ("optical disc drive apparatus" of Col. 6, lines 57-58) comprising a controllable light beam generator, typically a laser ("laser diode unit (LDU)" of Col. 7, line 42); wherein said control unit has a second output for generating a control signal for said light beam generator (because "upper-level controller 13 . . . exchang[es] commands and data with a host 12" (Col. 8, lines 20-27 and Col. 8, line 65-Col. 9, line 2), the received commands controlling performance of read/write operations (Col. 9, lines 18-22) which are performed using the LDU (Col. 7, lines 50-51), the upper-level controller 13 must have an output to control the LDU based on a command for a read/write operation); and wherein the control unit is designed to switch OFF said light beam generator while operating in said FAN mode (the light beam generator of Nakatsuka is switched off during the fan mode of Fig. 2 because no read/write operation is being performed (Col. 9, lines 5-22)).

In regard to claim 19, Nakatsuka discloses that the disc drive apparatus comprises a temperature measuring means (Fig. 1, element 5) for generating a measuring signal ("output of the thermistor 5" of Col. 8, lines 47-49) indicating a temperature occurring within the disc drive apparatus (Col. 7, lines 50-67), the temperature measuring means being arranged for measuring the temperature of said light beam generator ("thermistor 5 is provided in the vicinity of the LDU [(laser diode unit)] of the pickup 4" and "is suitably used in the pickup 4 as a temperature measuring device for detecting the temperature of the LDU" (Col. 7, lines 50-67)).

In regard to claim 20, Nakatsuka discloses that the disc drive apparatus comprises at least one controllable functional unit ("laser diode unit (LDU)" of Col. 7, line 42); wherein said control unit has a third output for generating a control signal for said functional unit (because "upper-level controller 13 . . . exchang[es] commands and data with a host 12" (Col. 8, lines 20-27 and Col. 8, line 65-Col. 9, line 2), the received commands controlling performance of read/write operations (Col. 9, lines 18-22) which are performed using the LDU (Col. 7, lines 50-51), the upper-level controller 13 must have an output to control the LDU based on a command for a read/write operation (and note that this output is a "third output" because it is in addition to the output to element 3 and the output to element 6 from upper-level controller 13 shown in Fig. 1)); and wherein the control unit is designed to switch OFF said functional unit while operating in said FAN mode (the light beam generator of Nakatsuka is switched off during the fan mode of Fig. 2 because no read/write operation is being performed (Col. 9, lines 5-22)).

7. Claims 1 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by the second embodiment (Figs. 4-5 and their descriptions) of Nakatsuka.

In regard to claim 1, Nakatsuka discloses a disc drive apparatus (Fig. 4, element 21) for writing and/or reading information into and/or from a disc (Fig. 4, element 2 and Col. 6, lines 57-59), comprising: a controllable motor (Fig. 4, element 3) for rotating a disc (Fig. 4, element 2); a control unit (Fig. 4, element 29) having a first output (Fig. 4, portion of element 24 from which the arrow from element 24 to element 3 is output) for generating a control signal (Fig. 4, arrow from element 24 to element 3) for said motor (Col. 13, lines 48-59); wherein the control unit is designed to be capable of operating in a FAN mode ("idling state" of Col. 14, line 43) in which said motor is rotated without any writing and/or reading being executed by the disc drive apparatus (Fig. 5, step S23 and Col. 14, lines 17, 36-44 and 54-66).

In regard to claim 8, Nakatsuka discloses that said control unit is designed to start a first timer (Fig. 4, element 27) on transition to said FAN mode (Fig. 5, step S23), and to exit said FAN mode after a first predetermined time ("wait time of 3 minutes" of Col. 14, lines 57) determined by said first timer (Col. 14, lines 54-66 and note that FAN mode is exited after a wait time of 3 minutes when the disc drive apparatus transitions from the idling state of step 23 to the sleep mode state of step 24 (Fig. 5)).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakatsuka.

Nakatsuka discloses the disc drive apparatus according to claim 1 (see rejection of claim 1 over Nakatsuka above), wherein said control unit is designed to set, in said FAN mode, a rotational speed of said motor at a predetermined safety value (rotational speed at "the destination pickup address" of Col. 13, line 5 and see Fig. 3). Nakatsuka does not disclose that the predetermined safety value is selected for maximum cooling effect if interpretation of the claimed "a predetermined safety value . . . selected for optimum cooling effect" were limited to a predetermined safety value selected for maximum cooling effect.

"[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation" (MPEP 2144.05(II) *quoting In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). Here, the general conditions of the claimed rotational speed and its cooling effect are disclosed in Fig. 3 of the Nakatsuka prior art.[2] It would have been obvious to one of ordinary skill in the art at the time the invention was made for the predetermined safety value of Nakatsuka to be selected for optimum cooling effect, the motivation being "[t]he normal desire of scientists or artisans to improve upon what is already generally known" (MPEP 2144.05(II) *quoting Peterson*, 315 F.3d at 1330, 65 USPQ2d at 1382).

9. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakatsuka as applied to claim 1 above, and further in view of Matsui (US 2001/0053112).

Nakatsuka discloses Nakatsuka discloses the disc drive apparatus according to claim 1 (see rejection of claim 1 over Nakatsuka above) but does not disclose that the control unit is

[2] Nakatsuka even discloses that the rotational speed at the innermost zone has a maximum cooling effect (Fig. 3 and Col. 11, lines 10-37).

designed to be capable of operating in a first safety mode during which writing/reading is performed at a first predetermined safety speed.

Matsui discloses a disc drive apparatus (Fig. 14) for writing and/or reading information into and/or from a disc (Paragraphs 0279 and 0281), comprising: a controllable motor (Fig. 14, element 2) for rotating a disc (Fig. 14, element 1); a control unit (Fig. 14, elements 14, 15 and 17-19) having a first output for generating a control signal for said motor (Fig. 17, step S192 and Paragraph 0295). Matsui discloses that the control unit is designed to be capable of operating in a first safety mode (mode within in which writing is restarted with a write rate reduced by one step (Fig. 17, steps S192-S193 and Paragraphs 0319-0320)) during which writing/reading is performed at a first predetermined safety speed (write rate reduced by one step (Paragraphs 0319-0320)) "to carry out a stable data recording, and to avoid the cause of temperature rise" (Paragraph 0320).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made for the control unit of Nakatsuka to be designed to be capable of operating in a first safety mode during which writing/reading is performed at a first predetermined safety speed as suggested by Matsui, the motivation being to carry out a stable data recording, and to avoid the cause of temperature rise.

10. Claims 1, 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nguyen (US 6,359,856) in view of Glorioso et al (hereinafter Glorioso).

In regard to claim 1, Nguyen discloses a disc drive apparatus (Figs. 1 and 2, element 22) for writing and/or reading information into and/or from a disc (Col. 4, line 15), comprising: a controllable motor (Fig. 2, element 24) for rotating a disc (Fig. 2, element 34); a control unit

having a first output for generating a control signal for said motor (inherent to the operation of "variable speed electric motor 24" (Col. 3, line 62), which "driv[es] rotation of hub 28, and thus the disc 34, . . . while a . . . laser scanner 42 'reads' the spinning compact disc 34" (Col. 4, lines 9-15)). Nguyen discloses that the disc/fan is rotated during reproduction but does not disclose rotation of the disc/fan is controlled without any writing and/or reading being executed by the disc drive apparatus. Accordingly, Nguyen does not disclose that the control unit is designed to be capable of operating in a fan mode in which said motor is rotated without any writing and/or reading being executed by the disc drive apparatus.

Glorioso discloses a disc drive apparatus (Fig. 1) for writing and/or reading information into and/or from a disc, comprising: a controllable motor ("fan motor" of Col. 5, line 65) for rotating a fan (Fig. 1, element 114 and Col. 5, lines 65-66); a control unit (Fig. 2) having a first output (Fig. 2, element 138) for generating a control signal for said motor (Col. 6, lines 43); wherein the control unit is designed to be capable of operating in a fan mode in which said fan is rotated without any writing and/or reading being executed by the disc drive apparatus (fan 114 is rotated when the temperature of the disk drive exceeds a minimum temperature regardless of whether any writing and/or reading being executed by the disc drive apparatus (Fig. 6 and Col. 6, lines 25-43)).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the control unit of Nguyen to be additionally designed to be capable of operating in a fan mode in which said fan is rotated without any writing and/or reading being executed by the disc drive apparatus as suggested by Glorioso, the motivation being for the fan of Nguyen to generate a cooling air flow when the temperature of the disc drive of Nguyen exceeds a

minimum temperature even without any writing and/or reading being executed by the disc drive apparatus to prevent deterioration of the performance of semiconductor lasers and other electronic parts due to an increase in the temperature in the drive (note that deterioration due to increase in temperature is in the knowledge generally available to one of ordinary skill in the art (see Col. 2, lines 10-17 of Ikuma (US 5,297,116))). As a result, in the disc drive apparatus of Nguyen in view of Glorioso, the motor is controlled by the control of Nguyen when writing and/or reading is being executed and by the control of Glorioso when no writing or reading is being executed.

In regard to claim 21, Glorioso discloses that the control unit is designed to be capable of operating in a FAN2 TURNTABLE mode in which said motor is rotated without a disc being present (fan 114 is rotated when the temperature of the disk drive exceeds a minimum temperature regardless of whether a disc is present (Fig. 6 and Col. 6, lines 25-43)).

In regard to claim 22, Glorioso discloses that the disc drive apparatus of Nguyen in view of Glorioso comprises temperature measuring means (Fig. 2, element 130) for generating a measuring signal (Fig. 2, element 132) indicating a temperature occurring within the disc drive apparatus (Col. 6, lines 25-35), the temperature measuring means preferably being arranged for measuring the temperature of a disc drive component (temperature sensor 132 is inherently arranged for measuring the temperature of whatever disc drive component is nearest to temperature sensor 132); wherein said control unit has a signal input (Fig. 2, portion of fan control 134 that receives element 132) coupled to said temperature measuring means (Fig. 2), and is designed to enter said FAN2 TURNTABLE mode if, in an idle state with no disc loaded, said measuring signal indicates a temperature above a threshold temperature (Fig. 2, element

136), for instance 60.degree. C (Fig. 6; Col. 6, lines 25-43; and note that, when the disc drive apparatus of Nguyen in view of Glorioso is in an idle state with no disc loaded, the disc drive apparatus of Nguyen in view of Glorioso is without any writing and/or reading being executed by the disc drive apparatus and under the control of Glorioso (see rejection of claim 1 over Nguyen in view of Glorioso above)).

Allowable Subject Matter

11. Claims 17 and 23 would be allowable if rewritten to overcome the objection(s) set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

In regard to claim 17, none of the references of record alone or in combination suggest or fairly teach a disc drive apparatus including all of the limitations of claims 1 and 16 and wherein said control unit (90) is designed to make a transition to said first safety mode (SM1) in response to receiving the measuring signal (S.sub.T) indicating a temperature (T) above said second threshold temperature (T2), and to make a transition from said first safety mode (SM1) to said duty cycle mode (DCM) if, after said predetermined time determined by said timer, said measuring signal (S.sub.T) still indicates a temperature (T) above said second threshold temperature (T2).

In regard to claim 23, none of the references of record alone or in combination suggest or fairly teach a disc drive apparatus including all of the limitations of claims 1 and 21 and wherein said control unit (90) is designed to start (step 273) a fifth timer (TIM5) on transition to said FAN2 TURNTABLE (SM4) mode, and to exit said FAN2 TURNTABLE (SM4) mode after a fifth predetermined time (p5) determined by said fifth timer (TIM5).

12. Claims 4, 5, 9, 12, 13 and 15 would be allowable if rewritten to overcome the objection(s) and rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

In regard to claim 4, none of the references of record alone or in combination suggest or fairly teach a disc drive apparatus including all of the limitations of claims 1 and 2 and wherein said control unit (90) is designed to monitor said measuring signal (S.sub.T) during a write/read operation, to set (step 211) a first flag (FT1) in response to receiving the measuring signal (S.sub.T) indicating a temperature (T) above a first threshold temperature (T1), for instance 60.degree. C., and to enter (step 214) said FAN mode (SM2) if, at the completion of a write/read operation, said first flag (FT1) is set.

In regard to claim 9, none of the references of record alone or in combination suggest or fairly teach a disc drive apparatus including all of the limitations of claims 1 and 2 wherein said control unit (90) is designed to monitor said measuring signal (S.sub.T) during a write/read operation, to set (step 222; step 232) a timer (TIM2; TIM3) in response to receiving the measuring signal (S.sub.T) indicating a temperature (T) above a second threshold temperature (T2) higher than said first threshold temperature (T1), for instance 70.degree. C., and to enter said FAN mode (SM2) if, after a predetermined time (p2; p3) determined by said timer (TIM1; TIM3), said measuring signal (S.sub.T) still indicates a temperature (T) above said second threshold temperature (T2).

In regard to claim 12, none of the references of record alone or in combination suggest or fairly teach a disc drive apparatus including all of the limitations of claims 1 and 10 and wherein

the duty cycle mode (DCM) has a cycle duration selected in the range of 1-10 sec, preferably in the order of about 5 sec.

In regard to claim 15, none of the references of record alone or in combination suggest or fairly teach a disc drive apparatus including all of the limitations of claims 1 and 10 and further comprising temperature measuring means (50) for generating a measuring signal (S.sub.T) indicating a temperature (T) occurring within the disc drive apparatus, the temperature measuring means (50) preferably being arranged for measuring the temperature of a disc drive component; wherein said control unit (90) has a signal input (95) coupled to said temperature measuring means (50), and is designed to monitor said measuring signal (S.sub.T) during a write/read operation, to set a timer in response to receiving the measuring signal (S.sub.T) indicating a temperature (T) above said second threshold temperature (T2), and to enter said duty cycle mode (DCM) if, after a predetermined time determined by said timer, said measuring signal (S.sub.T) still indicates a temperature (T) above a second threshold temperature (T2) higher than said first threshold temperature (T1).

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Shimizu et al (US 4,578,787) disclose rotating a disc after the disc has been in a held state longer than a predetermined amount of time to agitate the air in the player and suppress the maximum value of the rising temperature (Col. 2). Kulakowski et al (US 5,566,077) disclose inhibiting write and erase operations when the temperature exceeds a first threshold and inhibiting read and verify operations as well when the temperature exceeds a second threshold (Col. 4-6).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael V. Battaglia whose telephone number is (571) 272-7568. The examiner can normally be reached on M-F, 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, A. Wellington can be reached on (571) 272-4483. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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